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ABSTRACT

This paper is a report on an ongoing project at the University of Lethbridge (Alberta, Canada) to implement and evaluate prototype online delivery systems for graduate and undergraduate courses. In the hands of instructors who are good teachers, with course designs that are effective and adapted to course material and learners, and with adequate network support, online courses can be successful and effective. To accomplish this, an interdisciplinary team is assembled to design, test, and implement a prototype for online teaching. The primary outcomes of this project are the identification and development of instructional technologies, approaches to design and evaluation of online courses, and the professional development of faculty. This paper describes and identifies problems encountered in this process and solutions used to remedy these. (Contains 17 references.) (Author/AEF)

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On-line Distributive Education Project

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Abstract: This paper is a report on an ongoing project to implement and evaluate prototype on-line delivery systems for graduate and undergraduate courses. In the hands of instructors who are good teachers, with course designs that are effective and adapted to course material and learners, and with adequate network support, on-line courses can be successful and effective. To accomplish this an inter-disciplinary team is assembled to design, test, and implement a prototype for on-line teaching. The primary outcomes of this project are the identification and development of instructional technologies, approaches to design and evaluation of online courses, and the professional development of Faculty. This paper describes and identifies problems encountered in this process and solutions used to remedy these.

Description

The distributive on-line project is an initiative of the Faculty of Education at the University of Lethbridge in Alberta, Canada. This project investigates the effectiveness and feasibility of making components of courses or entire courses available to our students from a distance. This is a report of a work in progress. This paper describes initial experimental stages, development of prototypes, list problems encountered, processes used, speculates on the implications for learning, and discusses future directions.

The term "distributive" suggests that learning is not just the delivery of information but that information becomes transformed to knowledge and understanding. This process involves more than passive involvement so part of the mandate of this project is to explore diverse instructional strategies that engage the learners with the course materials, with other participants, and the instructor.

Purpose

The intent of this project is to assist Faculty members developing and implementing on-line versions of their courses, or parts of their courses. To accomplish this an inter-disciplinary team was established to design, test, and implement a prototype for on-line teaching in the spring of 1998. It is not the intent to create a template that all courses will fit into. Rather, this project's goal is to develop a set of generic tools that can be selected and adapted by instructors. It is not anticipated that all courses will use all the tools, nor will the tools necessary be used in the same way. The project provides tools and the expertise to appropriately infuse the technology into existing courses.

Rationale

Why be involved in an on-line project? The answer to this question is multifaceted. A central point is that communication technology is viewed as a tool, and it is the appropriate use of this tool that is compelling. The tool can facilitate new ways of thinking about teaching and learning. These new ways of thinking come from matching teaching/learning strategies with features of the tool. The research and development of on-line courses provides a platform for investigating this relationship. Another reason for our interest in this area is the

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pragmatic issue of access to programs. The Faculty offers its four core courses in the M.Ed. Program to cohort groups in distant locations. Instructors travel to these locations to teach courses on weekends. If some of these courses could be delivered in part or in whole by the Internet, the cost in dollars and time of Faculty members would be reduced. In addition, students in these cohort groups do not presently have an opportunity to take elective courses during the regular semesters once they have completed the four core courses. For this reason they seek independent study courses. If electives were available on-line, it would meet the needs of these cohort groups. In addition, opportunities exist at the undergraduate level. It is not necessary to think of online courses being an all or nothing situation, these resources can be used to supplement traditional face to face courses with enrichment, review, as well as alternative forms of resources, interaction, and collaboration.

Moving on-line generates a number of stresses and strains on the project and the institution. These strains come from concerns about the financial viability developing on-line courses and questions regarding the educational value of such an initiative. Also there are those who want to get involved but don't have the expertise or knowledge to make it happen adding to the issues that the project is addressing. Before initiating an on-line course the rationale for such a move and a planned strategy for its success needs to be considered and articulated.

Putting materials on-line can benefit the traditional class because it can provide students:

- timely information
- a platform for on-going discussion and thoughtful reflections outside the regular classroom
- important information that is available any time and can be updated and distributed easily
- resources that can be subdivided and made available at opportune times and linked to related content
- timely feedback to assignments and questions can increase student effectiveness

These advantages are available to both on-campus and distant students. Another purpose of this project is to support courses that will be done entirely on-line. In this case it saves students the time, expense, and dangers of commuting to a distant locations and being available at a designated times.

This project is set up to support mixed courses that lend themselves to partial on-line support and partial face to face contact. In other words we want to support and guide Faculty to use technology appropriately given the situation.

Process

In the summer of 98 the project team began by working on a generic structure for the on-line course outline as well as the look and feel for some on-campus workshops. This was a useful exercise because it gave the team an opportunity to pilot ideas with students who were on-campus who we could watch. After this initial experimentation, the team determined the look and feel of the web pages and that the course schedule should drive navigation through the web pages. An on-line reflections database was developed and tested. These on-line on-line reflections represented students comments about the content of the course as well as opinions on the on-line materials.

In the Fall of 98 there was a more ambitious pilot done with a graduate course that was offered at a distance. In this case there were face to face sessions as well as on-line components. A number of tools were piloted at this point, on-line reflections, pdf files, newsgroup, on-line gradebook, and on-line submission of assignments. In addition, a CD was developed for this course that would allow students to access linked resources without the need for lengthy download times. It was setup so that students would seamlessly go from information on the CD to the on-line tools. Web pages coming off the CD were so indicated with a watermark so it was evident to the user when they were on-line or when they were using the CD. Some technical problems were encountered because of the variety of configurations in the field. For the Spring 99 semester this problem has been reworked with a front-end that helps students through the process of installing the necessary components on their systems. There were other problems as well, including students having difficulty logging onto their on-line gradebook because the University uses a different user name than what they use on their own system. Some of these problems and difficulties are easily resolved with clear instructions. The important point here is that technical and procedural glitches are bound to crop up, which makes the process of prototyping and constant revamping of materials is an essential aspect to developing on-line courses. In other words, expect setbacks and problems.

Team

This also brings up the issue of the development team. An inter-disciplinary team was established to design, test, and implement a prototype for on-line teaching. Each week we met as a team to discuss progress, set time lines, resolve problems, develop policies, and determine procedures. In this way emerging problems or difficulties are aired and resolved by consensus of the group. During this time ideas are presented, critiqued, and alternatives brainstormed. This process is an important aspect to the evolution of the on-line materials. The team is comprised of the head of the project, a coinvestigator, a research assistant, a development manager, two multimedia personnel, and the manager of technology for the Faculty. On occasion, our numbers are increased by representatives from the University as a whole and Faculty members interested in putting their courses on-line. For other institutions exploring the notion of on-line courses, this team approach is highly recommended.

The mandate of the project is to develop a course that would be offered totally on-line in the Spring of 99. In the Fall of 98 work began on this course. Much of the development of the tools and their fine-tuning had already been done for the Fall pilot offerings. The background work for these pilot offerings greatly facilitated the production of an entire on-line course in the spring. It is therefore prudent to work into on-line production in a graduated way. Using pilot courses, which involve limited on-line components, allows testing and fine-tuning of the products and process without the all out risk involved with an entirely on-line offering.

Products

It is hoped that the outcomes of this project will be adaptable to other course content and domains. One of the products is a set of procedures that set out the lowest common denominator in terms of software, hardware, and skill level that the project will support. Several databases were devised to survey prospective students in this regard. This information helps the team diagnose and work through individual problems that arise given knowledge of their level of expertise and their technology platform.

One of the expectations of this project is that it be a platform for other Faculty to become involved. In order to have participation to take place in an orderly fashion, the team developed a time-line for Faculty involvement. This information alerts Faculty of the development time required. In this way Faculty can give the nature of their courses, activities, and assignments due consideration before putting them on-line. Merely translating courses into web pages does not make sense and may not result in appropriate use of technology. The time line affords the team, time to meet with interested Faculty and begin the process of matching the communication technology tools with features of the courses. The thinking is that the solutions that are offered provide some educational advantage.

Another important role of the project is to investigate the value of on-line offerings as well as to determine their economic viability. With the offering of a totally on-line course in the spring semester, the project plans is investigating these issues with a variety of research methodologies as listed below:

- case studies
- questionnaires
- student comments/communications
- assignments
- peer evaluation
- monitoring on-line access

Some of these methodologies have been tested with students in our pilot courses in attempts to fine-tune those tools. Here are some sample comments made by students through on-line reflections:

"I have finally worked out the difficulties that I had. I believe that the problems were founded in my own computer and not the website or CD. The CD is very user friendly and interesting."

"I will not be able to attend the session on Oct. 24th. Hopefully anything needed from that session will be available online."

"I'm getting real comfortable with the methods of using this online interactive stuff for assignment purposes. I think its just great."

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"Still having problems with Netscape freezing sometimes when I go online from the CD. I just tried to submit and it wasn't accepted by U.Leth. I dislike wasting time over this type of problem."

"I found this week that the website was hard to get onto, so it was nice to have the CD as a back up."

"I found it very easy to use and manage. Some of the files, I think its the shockwave ones, take a long time to load, but that could just be my computer."

As previously mentioned, an important aspect to the development of an on-line project is the establishment of a development team. The challenge for the team is to develop generic tools that could be used in the pilot courses and future courses with some modifications. The team has come up with a number of interactive on-line tools, which were identified and tested:

- peer evaluation for allowing students to evaluate each others work
- reflections; for submitting comments about the content of the course and the on-line materials.
- newsgroup; for class discussions
- email; for personal correspondence and attaching assignments
- listservs; another venue for class discussions
- database; for administering questionnaires, course evaluations, and gathering demographic information
- gradebook; for viewing up-to-date comments and assessment of submitted assignments

In addition to the interactive on-line tools, a number for methods of providing resources were experimented with:

- on-line course outlines
- Authorware or Director movies
- Powerpoint presentations
- pdf files

These types of files, thou neither interactive nor collaborative in nature, do provide a means for access of timely information. The course outline is provided on-line but other resources are included on the CD. The resources are linked off the web pages so that it is associated with the appropriate content. This has some advantages particularly with the pdf files in that information can be broken down and then linked to content pages in the course outline. In this way the content and the resources are much more closely linked. In addition, students can use these resources as background for future on-line discussions or comments.

Another product that was developed was an on-line database for tracking time spent on various components of the project by team members. This will be a tool for compiling important information about the economy of the project. In this way projections can be made about the cost in time and money to develop similar courses. Of course it must be recognized that startup expenses and time will always be higher for the initial offerings than for subsequent courses that take advantage of the previous research and development.

There are some secondary outcomes as well. The on-line tools represent some benefits for the learner. For instance, the instructor monitors the on-line reflections and this in turn provides quick turn around time for modifications, meeting student needs in a timelier manner. This also gives the instructor a sense for students' perceptions of and grasp of course content; this in turn is useful information for guiding instructional interventions. With the on-line reflections student comments were posted anonymously for other students to view. With this information students could spring board to take the discussion to a new level and this process also encouraged a sense of ownership in the content. There was a sense that because students were already on-line, they tended to use on-line research tools (search engines, ERIC) perhaps more than they would have normally. The listserv discussions became a platform for reflective discussion. It is the asynchronous aspect of listservs and newsgroups that provides some advantages, in that students submit reflective comments rather than off the cuff replies. Many of students in our Faculty take extended practicums in the field at a distance from our campus. Potentially on-line options could provide equal access and extended access to resources These can be made available in a timely manner, as needed by students in the field. Another potential benefit is that students can share resources with each other in a variety of ways. As an illustration, the project will have students compile a set of resources, ideas, lesson plans, or activities, in digital format and then provide these resources will be compiled onto a CD and distributed to all students. In this way students will continue to reference it after the course is over and represents a diverse set of ideas or resources. In addition the project is

experimenting with an alumni network to maintain linkages to the field with individuals who have taken our courses. This is a tool is an alumni listserv so that there can be ongoing discussions and correspondence. Through the use of the collaborative tools the paradigm begins to shift to a cooperative learning environment where sharing is valued rather than competition. For instance, students posted abstracts of the their thesis proposal to the newsgroup for comment and critique. It is important to make students accountable for what they do on-line; the lesson is, give them credit for involvement with the on-line tools.

This project also seems to have some value for instructors. For instance, there is an opportunity to merge research and scholarly teaching. Although not related to being on-line per se, the whole process fosters a reflective approach to the design of courses and helps make the activities the students are engaged in, are reflective of the goals. This comes about by rigorously mapping the objectives and goals to the activities. This was then monitored through online course evaluations combined with reflections. Another interesting side affect of putting courses online is that it becomes public. This makes the courses transparent by providing openness in the sense that anyone can now look at what the courses look like. The team approach contributed to the notion of scholarly teaching by the sharing of different perspectives. There was a sense that the quality of the course improved through the participation and shared vision of the team members.

Conclusions

Since this is a work in progress there are many issues and questions left unresolved or under investigation. These include the following issues.

Can we describe the characteristics of successful users of on-line courses? Are they independent learners or are there any significant differences? What are the common problems or barriers to success in on-line courses? Is it possible to document the asynchronous advantage of email, listservs, on-line reflections, and newsgroups?

Another issue is how on-line materials are used? Do student access all the materials, are the interactive components used effectively, if so, under what conditions?

To address some of these issues we hope to develop profiles on students and track the way they interact with the on-line materials. This combined with student comments, interviews, on-line reflections, quality of assignments, nature of the interactive messages (listserv, newsgroups, email), questionnaires, and case studies should give a better picture of the effectiveness.

In conclusion, there are some basic lessons that can be shared from the on-line project. Through student portrayals the benefits and frustrations of on-line courses are evident. However, this is requires more investigation and evidence. For the development of quality on-line courses it is important to develop a coherent project with a rationale, a mandate, and a planned strategy for success. Working in an interdisciplinary team facilitates the development of on-line course offerings. Regular meetings are important and there is a need for constant prototyping and revamping of materials. Another key element is staging the production process so there is sufficient time working up to a full-blown on-line offering. Approaching it in a graduated way was important for weeding out problems before they became critical. Another essential element is asking the question, why. Why use these tools? Constantly questioning the motives and rationale for selecting particular tools or strategies facilitates the culling process, which is necessary for determining appropriate technology tools to use.

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